

Claims:

1. A method for determining positions of targets in a position space using signals scattered by the targets, comprising use of a number, spread in known points in the position space, of transmitters and receivers of electromagnetic or acoustic signals, each bistatic pair of transmitter and receiver being referred to as a measuring facility, further comprising analysis of received signals, which includes determining of moments of transmission and reception according to generally accepted principles of radar and parameterisation of received signals as a function of the path of propagation between transmission point and reception point, but without the conventional requirement in radar for directional information, the positions being primarily determined by selecting the position of the transmitters and receivers and the range of the transmitters so that a target at an arbitrary point within the position space can be measured by scattering in the target by at least four cooperating measuring facilities; by selecting an even number of cooperating measuring facilities, however at least 4, for the determination; by associating targets by calculating, in two independent ways, two sets of sums of distances between transmission points and targets and, respectively, targets and reception points, based on bistatic distances, measured via the targets, for selected measuring facilities, sorting said two sums with respect to the distance, comparing these with each other and establishing that the sums, calculated in the two different ways, which correspond with each other, while considering a margin of error that has been determined in advance, are stated to correspond to conceivable targets; and by calculating the positions of the targets from a system of equations for the bistatically measured distances, *characterised* by improving and completing the association of targets by performing calculations for bistatically measured Doppler velocities, corresponding to calculations for distances, and establishing that the sums, calculated in the two different ways, which correspond with each other, while considering a margin of error that has been determined in advance, are stated to correspond to targets.
2. A method as claimed in claim 1, *characterised* by improving the association of targets by calculating the sum of all distances between the targets and the transmission points and the reception points, respectively, in a third way as the sum of bistatically measured distances via the target for measuring facilities,

sorting the sum with respect to the distance, comparing this with previously calculated sums of distances, and establishing that the cases where two of the three sums, calculated in said different ways, correspond with each other, while considering a margin of error that has been determined in advance, are stated to correspond
5 to targets.

3. A method as claimed in claim 1, *characterised* by improving the association of targets by calculating the sum of all Doppler velocities between the targets and the transmission points and the reception points, respectively, in a
10 third way as the sum of bistatically measured Doppler velocities via the target for measuring facilities, sorting the sum with respect to Doppler velocity, comparing this with previously calculated sums of Doppler velocities and establishing that the cases where two of the three sums, calculated in said different ways, correspond with each other, while considering a margin of error that has been determined in advance, are
15 stated to correspond to targets.

4. A method as claimed in claim 2 or 3, *characterised* by improving the association of targets by requiring that all three sums, calculated in said different ways, correspond with each other, while considering a margin of error
20 that has been determined in advance, for targets to be indicated.

5. A method as claimed in claim 4, *characterised* by calculating the velocities of the targets from a system of equations for the bistatically measured Doppler velocities.
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6. A system for determining positions of targets in a position space using signals scattered from the targets, comprising a number, spread in known points in the position space, of transmitters and receivers of electromagnetic or acoustic signals, each bistatic pair of transmitter and receiver being referred to as a measuring facility, further comprising analysis equipment for storing and analysing received signals, which includes determining of moments of transmission and reception according to generally accepted principles of radar and parameterisation of received signals as a function of the path of propagation between transmission point and reception point, but without the conventional requirement in radar for directional
30 information, the positions being primarily determined by the position of the transmitters and receivers and the range of the transmitters being selected so that a
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- target at an arbitrary point within the position space can be measured by scattering in the target by at least four cooperating measuring facilities; by the analysis equipment selecting an even number of cooperating measuring facilities, however at least 4, for the determination; by the analysis equipment associating targets by calculating, in two independent ways, two sets of sums of distances between transmission points and targets and, respectively, targets and reception points, based on bistatic distances, measured via the targets, for selected measuring facilities, sorting said two sums with respect to the distance, comparing these with each other and establishing that the sums, calculated in the two different ways, which correspond 5 with each other, while considering a margin of error that has been determined in advance, are stated to correspond to conceivable targets, and by the analysis equipment calculating the positions of the targets from a system of equations for the bistatically measured distances, *c h a r a c t e r i s e d* in that the analysis equipment improves and completes the association of targets by performing calculations for bistatically measured Doppler velocities, corresponding to the calculations 10 for the distances, and establishing that the sums, calculated in the two different ways, which correspond with each other, while considering a margin of error that has been determined in advance, are stated to correspond to targets.
- 15 20 7. A system as claimed in claim 6, *c h a r a c t e r i s e d* in that the analysis equipment improves the association of targets by calculating the sum of all distances between the targets and the transmission points and the reception points, respectively, in a third way as the sum of bistatically measured distances via the target for measuring facilities, sorting the sum with respect to the distance, comparing this with previously calculated sums of distances, and establishing that the cases 25 where two of the three sums, calculated in said different ways, correspond with each other, while considering a margin of error that has been determined in advance, are stated to correspond to targets.
- 30 35 8. A system as claimed in claim 6, *c h a r a c t e r i s e d* in that the analysis equipment improves the association of targets by calculating the sum of all Doppler velocities between the targets and the transmission points and the reception points, respectively, in a third way as the sum of bistatically measured Doppler velocities via the target for measuring facilities, sorting the sum with respect to Doppler velocity, comparing this with previously calculated sums of Doppler velocities and establishing that the cases where two of the three sums, calculated in

said different ways, correspond with each other, while considering a margin of error that has been determined in advance, are stated to correspond to targets.

9. A system as claimed in claim 7 or 8, *characterised* in that the analysis equipment improves the association of targets by requiring that all three sums, calculated in said different ways, correspond with each other, while considering a margin of error that has been determined in advance, for targets to be indicated.
10. 10. A system as claimed in claim 9, *characterised* in that the analysis equipment calculates the velocities of the targets from a system of equations for the bistatically measured Doppler velocities.